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Promoting education, public awareness and training

Report of the Secretary-General

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INTRODUCTION

1. Chapter 36 of Agenda 21 (Promoting education, public awareness and training) is a cross-sectoral chapter. At the United Nations Conference on Environment and Development (UNCED), there was unanimous agreement among developed and developing countries alike that education was critical for promoting sustainable development and increasing the capacity of the people to address environment and development issues. 1/ Unlike many other chapters of Agenda 21, chapter 36 is both virtually non-contentious and applicable to all countries. But although support for chapter 36 is strong, it could become the forgotten priority of UNCED.

2. The scope of chapter 36 is extremely broad, ranging from formal education systems at all levels, vocational training and development of the workforce to education in agriculture, adult education, and non-formal education and communication about environment and development. Chapter 36 also emphasizes that basic education as defined at the World Conference on Education for All (Jomtien, Thailand, March 1990) is a prerequisite to environmental and development education, and remains a priority for many countries of the world, that is, linked to the overall effort to combat poverty.

3. Chapter 36 is divided into three programme areas: (a) "Reorienting education towards sustainable development"; (b) Increasing public awareness"; and (c) "Promoting training".

4. The present report and its addendum were prepared by the United Nations Educational, Scientific and Cultural Organization (UNESCO), as task manager for chapter 36, with input from sources inside and outside the United Nations system.

I. CURRENT STATUS AND PROGRESS SINCE THE UNITED NATIONS CONFERENCE ON ENVIRONMENT AND DEVELOPMENT

5. The importance accorded to education in Agenda 21 has been reaffirmed, broadened and deepened within the new international consensus and framework for action emerging from the series of international conferences organized by the United Nations after UNCED. 2/

6. It is important to note that the theme "Education, public awareness and training" is one of the few themes for which explicit recommendations appear in the action plans for each of the conferences in the above-mentioned series, as well as in the Convention on biological diversity, the United Nations Framework Convention on Climate Change and the United Nations Convention to Combat Desertification in those Countries Experiencing Serious Drought and or Desertification, particularly in Africa. Implementation of chapter 36 of Agenda 21 therefore needs to be integrated with the implementation of analogous recommendations within the other action frameworks.

7. At the heart of this new international consensus is a new vision of the theme "Education, public awareness and training" as the essential underpinning

for sustainable development, a linchpin to support advances in other spheres, such as science, technology, legislation and production.

8. Education is no longer seen as an objective in and of itself but as a means to:

(a) Bring about the changes in values, behaviour and lifestyle that are needed to achieve sustainable development, and ultimately democracy, human security and peace;

(b) Disseminate the knowledge, know-how and skills that are needed to bring about sustainable production and consumption patterns and to improve the management of natural resources, agriculture, energy and industrial production;

(c) Ensure an informed populace that is prepared to support changes towards sustainability emerging from different sectors.

9. As to formal education, the implementation of the recommendations contained in chapter 36 to reorient education towards sustainable development coincides with a broad rethinking within many countries of their formal education systems, which are no longer considered adequate to meeting the needs of society and the workplace. Traditionally, education has been designed largely to pass on existing knowledge, skills and values. Today, education is being redesigned in terms of how to prepare people for life: for job security; the demands of a rapidly changing society; technological changes that now directly or indirectly affect every part of life; and, ultimately, the quest for happiness and well-being and quality of life. Education is therefore being redefined as a lifelong process that needs to be not merely readjusted but restructured and reformed according to new requirements. One such requirement is the goal of sustainable development, an overarching concept that has broad implications for curricula at all levels of education.

10. Since UNCED and the above-mentioned series of major international conferences, there has been ever greater recognition within all sectors of society that the fuel that will drive changes towards sustainable development will be public understanding. Therefore, greater emphasis is now placed on public awareness and beyond that on public action: a new understanding needs to be inculcated among people in all countries, of all ages and in all walks of life. This is a formidable challenge that will profoundly affect progress in implementing all other areas of Agenda 21.

11. Since UNCED, a number of events and studies have taken place that provide an overview and evaluation of the status of environmental and development education and directions for future work. These are described in detail in an addendum to the present report (E/CN.17/1996/14/Add.1); the attention of the Commission is drawn in particular to:

(a) The International Commission on Education for the Twenty-first Century, chaired by Jacques Delors and established by UNESCO to formulate suggestions and recommendations (to be published in April 1996) for policy makers and officials at the highest levels. The work of the

International Commission incorporates education for sustainable development, and therefore provides the broad context for implementation of chapter 36;

(b) An inter-sessional workshop on the theme "Education and public awareness for sustainable development" (Prague, 28 November-1 December 1995), organized by the Czech Republic in cooperation with UNESCO and the Department for Policy Coordination and Sustainable Development of the United Nations Secretariat, which formulated recommendations on the implementation of chapter 36 for consideration by the Commission at its fourth session.

II. CONSTRAINTS TO IMPLEMENTATION

12. The challenge after UNCED has been to translate into action the ambitious recommendations agreed upon by participating Governments. The vast scope of chapter 36, targeting people of all ages in all countries, constitutes in itself an impediment to implementation, suggesting the following questions: Where do we begin? What are the priorities? How can results be achieved quickly? And how can the numerous priority target groups, namely decision makers, youth, women and non-governmental organizations, be reached adequately? Nevertheless, the broad scope of the chapter is essential for addressing the complex issue of sustainability.

13. The theme "Education for sustainable development" is still an emerging concept that needs to be clarified at the national and international levels, a lengthy process that must involve all stakeholders. The theme "Environmental education", which emerged after the United Nations Conference on the Human Environment (Stockholm, 5-16 June 1972), and focused primarily on the environment and its protection, is seen as an important part of education for sustainable development but not its equivalent. The concepts of human development, social development and economic development need to be integrated with environmental concerns in a holistic, interdisciplinary conceptual framework, which is now increasingly referred to as "Education for sustainable development". The challenge, therefore, is far broader and deeper than the mere conversion of environmental education to education for sustainable development.

14. There is also uncertainty and sometimes confusion concerning the content of the theme "Education for sustainable development". What are its key messages? Which messages have universal validity? How can its core ideas be communicated to people who in order to be motivated to effect change must grasp complex global concepts in terms that relate to the reality of their experience in their communities and in their daily lives? What is the best way to communicate such concepts as interconnectedness, complexity, the whole Earth system and other basic notions related to sustainability, concepts that can seem overwhelming to many?

15. The gap between science and education compounds the difficulty of clarifying the content of education for sustainable development. The new understanding of this concept needs to be based on interdisciplinary, accurate, up-to-date and unbiased information, which is slow to move from the realm of academics and experts to the non-specialist users of such information.

16. The integration of sustainable development into formal education systems is also hampered by the lack of planners, teachers, and administrators that are trained in interdisciplinary approaches in general and in environment and development issues in particular.

17. While restructuring and reform of educational systems, coupled with pre- and in-service teacher training, offer the best prospects in the long run, the time required for such change needs to be taken into consideration, together with the budget restrictions that are prevalent in most countries today.

18. Training at all levels will be essential to change production and consumption patterns, transfer environmentally sound technologies, alleviate poverty and achieve full employment. The restructuring and globalization of the world economy will also require a flexible and adaptable workforce. Despite the progress that has been achieved in this area, much more will be required.

19. Finally, the political will needed to successfully reorient education, public awareness and training towards sustainable development is still lacking. The kinds of changes that are required will occur only if Governments, as well as society as a whole, give priority to reorienting education, a priority that is translated in concrete terms into the necessary financial investments. In most countries, although education is recognized by all as fundamental to building a viable future for humankind it is still low on the political agenda. Education thus risks becoming the forgotten priority in terms of concrete action, in the follow-up not only to UNCED but also to all the other international conferences and instruments mentioned above.

III. MAIN TRENDS

20. The main trends that have emerged since UNCED in the area of education, public awareness and training are as follows:

(a) Numerous countries are undertaking sweeping educational reform efforts to start to integrate the notions of sustainable development;

(b) Public understanding as a basis for action is being given increasing priority. The role of the media is seen as critical in this regard;

(c) There is a consensus on the need to clarify the concept of education for sustainable development and its content. The universal messages of sustainable development need to be articulated in terms that the public can understand and that can be easily related to local situations and needs, as a basis for action by communities, households and individuals;

(d) The new communication technologies, where available, offer significant opportunities to convey these key messages world wide rapidly and inexpensively, reaching down to the grass-roots level and promoting dialogue and exchange of experience;

(e) Increasingly, non-governmental organizations are mobilizing and networking to become more effective channels for communicating information and understanding about sustainable development;

(f) New opportunities are unfolding to break down the traditional barriers between the educational community and other sectors, and to form new partnerships, in particular with business and industry;

(g) There is a broader appreciation of the need to adapt sustainable development thinking and education to local environmental, socio-economic and cultural contexts;

(h) Within the United Nations system, discussions have begun to develop a new initiative for joint action that will build in part on the 20 years of experience that have been acquired within the UNESCO/United Nations Environment Programme (UNEP) International Environmental Education Programme (IEEP). This new cooperative arrangement will provide common elements in terms of content and methodology that could be applied and adapted by countries, major groups and local communities to further public understanding and action. Partners from outside the United Nations system could also be associated with this new action initiative.

IV. LINKAGES WITH OTHER CHAPTERS OF AGENDA 21

21. Chapter 36 (Education, raising of public awareness and training) is linked to virtually all other areas of Agenda 21. 3/ In the light of developments since UNCED, links between chapter 36 and the following chapters of Agenda 21 are particularly important: 3 (Combating poverty); 4 (Changing consumption patterns); 5 (Demographic dynamics and sustainability); 6 (Protecting and promoting human health); 8 (Integrating environment and development in decision-making); 37 (National mechanisms and international cooperation for capacity-building in developing countries); and 23-32 (all dealing with major groups).

V. MAIN POLICY RECOMMENDATIONS

22. The following policy recommendations are proposed to Governments and civil society in general and the Commission in particular:

(a) National educational policies need to be rethought so that they may achieve the most fundamental goals of society, namely people-centred, equitable and sustainable development, and ultimately democracy and peace. Therefore, the revamping of education for sustainable development needs to involve all sectors of society and not merely the traditional educational community or elements within Governments and ministries of education;

(b) Translating into reality the new vision of the role of education and public understanding will require imagination and innovation. A dynamic process of reflection, experimentation and sharing of knowledge and experience needs to be encouraged at all levels;

(c) Education needs to become a lifelong process. In addition to schools, households should be made a key entry point in order to ensure that women and girls, as well as the large number of children who are not part of the formal education system, receive the benefits of education;

(d) Through primary education for all, in particular in the developing countries, some basic messages concerning environment and development can be transmitted;

(e) Greater emphasis needs to be given to the role of education, public awareness and training in changing wasteful consumption patterns and lifestyles;

(f) The increasing emphasis on raising awareness and taking action at the community and municipality levels needs to be reinforced;

(g) The content of educational and teaching materials needs to receive special attention in order to ensure scientific accuracy, a global perspective and interdisciplinarity;

(h) Scientists need to be closely associated with education, public awareness and training for sustainable development;

(i) The training of teachers and communicators of all kinds, including journalists, must be a priority;

(j) Greater attention needs to be given to the role of the media, the arts and religion;

(k) Business and industry, with their expertise, distribution infrastructures, marketing know-how and financial resources, need to be key actors and stand to be major beneficiaries of an environmentally literate workforce, informed consumers and citizens ready to support the imminent changes in production and consumption patterns.

VI. ACTION REQUIRED

23. The Commission on Sustainable Development may wish to make the following recommendations concerning action needed to improve the implementation of chapter 36:

(a) Governments, major groups and the United Nations system should promote a lifelong learning society by ensuring democratic access by all to education, information and learning materials;

(b) Governments, the United Nations system and major groups should promote an interdisciplinary approach and a broadening of the traditional objectives and scope of education and training, including a linking or integration of educational activities and budgets within different ministries, departments and other concerned entities;

(c) Governments, major groups and the United Nations system should develop an integrated approach to implementing chapter 36 of Agenda 21 in conjunction with other relevant chapters of Agenda 21, as well as with relevant sections of the action plans of the other recent major United Nations conferences (especially the International Conference on Population and Development, the World Summit for Social Development and the Fourth World Conference on Women), and of the above-mentioned conventions dealing with biological diversity, climate change and desertification;

(d) Governments, major groups and the United Nations system should give greater emphasis to education, public awareness and training within the work programme of the Commission under the programme "Changing production and consumption patterns", with particular emphasis on the subprogramme "Evaluating the effectiveness of policy measures intended to change consumption and production patterns, such as command-and-control, economic and social instruments, government procurement policies and guidelines". Particular attention should be paid to encouraging the adoption of sustainable consumption habits and lifestyles by individuals and households, through public awareness campaigns, education and community-based action;

(e) Governments, the United Nations system and the international financial institutions should seek to develop indicators and other statistical methods to measure the economic and social benefits of education, public awareness-building and training to society as a whole in order to pave the way for new policies and investments that will revamp formal and non-formal education;

(f) Investments in education and training made by both national and international institutions should reflect the real value and impact of education in achieving sustainable development by improving both socio-economic development and environmental conditions;

(g) Governments, major groups and the United Nations system should ensure that education programmes contribute to a better understanding of the need to internalize environmental costs and to gain public acceptance of such policy measures as environmental taxes;

(h) Governments, the media, and business and industry should work together to ensure through the media and the advertising industry that key messages about sustainable development are communicated to the public;

(i) Governments, major groups and the United Nations system should make full use of the new communications technologies to promote education, public awareness and training. Public-private partnerships should be encouraged in this regard;

(j) Governments should ensure that national committees or councils for sustainable development involve persons knowledgeable about education, public awareness and training. National action plans for sustainable development should ensure that the concerns of chapter 36 are well represented, and should draw on assistance, as appropriate, from the United Nations system;

(k) The United Nations system should be encouraged to develop a broad cooperative international initiative to promote education, public awareness and training for sustainable development, building on past experience, in particular that of the UNESCO-UNEP International Environmental Education Programme. This new cooperative arrangement should be bold and imaginative, and should concentrate on a limited number of key undertakings during the next four or five years;

(l) The United Nations system, in cooperation with major groups, should develop guidelines for education for sustainable development, and should thereby clarify the concept and its key messages;

(m) Given the essential role of education in its broadest sense for the future implementation of the whole of Agenda 21, the United Nations system should report to the Commission at its fifth session on progress made in implementing the present set of recommendations, to be considered in the context of the 1997 overall review of the implementation of Agenda 21.

Notes

1/ See Report of the United Nations Conference on Environment and Development, Rio de Janeiro, 3-14 June 1992, vol. I, Resolutions Adopted by the Conference (United Nations publication, Sales No. E.93.I.8 and corrigenda), resolution 1, annex II, para. 36.3.

2/ Global Conference on the Sustainable Development of Small Island Developing States, Bridgetown, Barbados, 25 April-6 May 1994; International Conference on Population and Development, Cairo, 5-13 September 1994; World Summit for Social Development, Copenhagen, 6-12 March 1995; Fourth World Conference on Women, Beijing, 4-15 September 1995; and United Nations Conference on Human Settlements (Habitat II), to be held in Istanbul from 3-14 June 1996.

3/ See Report of the United Nations Conference on Environment and Development ..., para. 36.1.

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Addendum

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INTRODUCTION

1. In support of the report of the Secretary-General on promoting education, public awareness and training (E/CN.17/1996/14), the present addendum identifies the main policy issues and reviews progress achieved, experience gained and problems encountered since the United Nations Conference on Environment and Development (UNCED). It offers an overview of developments and activities at the international level, as well as those experienced by individual countries and major groups, including non-governmental organizations.

2. Both the report and the present addendum were prepared by the United Nations Educational, Scientific and Cultural Organization (UNESCO), as the task manager for chapter 36 (Promoting education, public awareness and training) of Agenda 21. Both draw on the results of the inter-agency consultation convened by UNESCO on the theme "Promoting education, public awareness and training for sustainable development: implementation of chapter 36 of Agenda 21" (Paris, 25 and 26 September 1995); the conclusions of an international workshop of experts on the theme "Education and public awareness for sustainable development", organized by the Czech Republic in cooperation with UNESCO and the Department for Policy Coordination and Sustainable Development of the United Nations Secretariat (Prague, 28 November-1 December 1995); and other consultations of experts and major groups.

3. It is important to appreciate the broad scope of chapter 36 of Agenda 21, which addresses three main issues: reorienting education towards sustainable development; increasing public awareness; and promoting training. Particular attention is paid to the issues of universal access to basic education; education as a lifelong process; formal and informal learning processes; curriculum revision and development; innovative vocational training; in-service training of both workers and managers; and the professional development of decision makers. Emphasis is also placed upon the importance of communication through all available channels, including the visual and performing arts, folk media, and new interactive and multimedia possibilities. The numerous and diversified outlets for educational messages offered by non-governmental organizations, business and industry, and the mass media are also given wide recognition. The wide scope of chapter 36 is essential for the overall attainment of sustainability but also confronts international agencies, national Governments, non-governmental organizations and the public at large with a particularly challenging set of tasks.

I. OVERVIEW OF MAIN POLICY ISSUES, PROGRESS ACHIEVED, EXPERIENCE GAINED AND PROBLEMS ENCOUNTERED

4. At UNCED, Governments acknowledged and supported the fact that education is crucial for promoting sustainable development and improving the capacity of people to address and respond to environment and development issues. The need for public understanding, political support and personal action is widely recognized in chapter 36 and nearly every other chapter in Agenda 21. The term "Education and training" is mentioned 617 times in Agenda 21; only the term "governments" is used more often. Education is central to achieving

environmental and ethical awareness, changing values and behaviours consistent with sustainable development and improving skills, as well as for informed public participation in decision-making.

5. The importance given to education in Agenda 21 has been reaffirmed, broadened and deepened within the new international consensus and framework for action that has emerged from the series of international conferences organized by the United Nations after UNCED, in particular the International Conference on Population and Development, the World Summit for Social Development and the Fourth World Conference on Women. "Education, public awareness and training" is one of the few themes for which explicit recommendations are contained in the action plans of each of these conferences, as well as in the Convention on Biological Diversity, the United Nations Framework Convention on Climate Change and the United Nations Convention to Combat Desertification in all Countries Experiencing Serious Drought and/or Desertification, particularly in Africa. Implementation of chapter 36 of Agenda 21 therefore needs to be integrated with the implementation of the analogous recommendations within all these action frameworks.

6. Ironically, however, this wide recognition of the importance of education is often overlooked or forgotten in developing or funding action plans at all levels, from local government to international conventions. Chapter 36 thus risks becoming the forgotten priority of UNCED.

7. Funding alone has not been the only impediment to the successful implementation of this chapter. Other major impediments have been the lack of clarity of both the concept of sustainable development itself and an agreed upon course of action. These have been especially difficult for formal education systems that are designed to teach or pass on a known body of knowledge as opposed to an emerging concept. It is difficult to retrain large numbers of educators when there is a tremendous shortage of trainers who are themselves only emerging in this new conceptual struggle.

A. Emerging trends in reorienting education towards sustainable development and heightening public awareness

8. The main thrust of chapter 36 - to reorient education to address sustainable development - is still sound. The alternative to this, to create an entirely new discipline and try to find room in already crowded timetables and create teacher-training courses based on a nebulous concept would have been a tremendous waste of resources. Nevertheless, the reorienting itself has been a daunting task for all nations.

9. One of the first established disciplines to lead the reorientation was environmental education (EE). EE was recognized and developed into a framework for protecting the environment after the United Nations Conference on the Human Environment (Stockholm, 5-16 June 1972). As a follow-up to that Conference, the joint UNESCO/United Nations Environment Programme (UNEP) International Environmental Education Programme (IEEP) was created in 1975 to develop a framework of pedagogical vision, understanding and goals for action. Around the world, public awareness campaigns were launched and information disseminated

through formal and non-formal education systems aimed at environmental protection and related concerns.

10. By examining the following goals articulated for EE more than 20 years ago, it is clear why EE has been closely aligned with the early work of preparing education for sustainable development. According to the Belgrade Charter adopted by the International Environmental Education Workshop (Belgrade, 13-22 October 1975) (see UNESCO(05)/C.61, vol. I, No. 1), the goals of environmental education are:

(a) To foster clear awareness of and concern about economic, social, political and ecological interdependence in urban and rural areas;

(b) To provide every person with opportunities to acquire the knowledge, values, attitudes, commitment and skills needed to protect and improve the environment;

(c) To create new patterns of behaviour for individuals, groups and society as a whole towards the environment.

11. While the goals of environmental education call for understanding economic, social, political and ecological interdependence, the actual practice of EE has focused largely upon the major concern of the above-mentioned Conference, i.e. the environment and its protection. With UNCED came the concept of the dual goal of both ongoing development and environmental stewardship. In order to achieve this sustainability, the educational effort needed to be broadened beyond the primary concern for the environment. After UNCED, the concept of human development as well as economic development (goods and services) added a more complex meaning to the concept of development than that portrayed by the media at UNCED. This new approach called for the integration of economics and a variety of social sciences to try to provide a holistic meaning to sustainable development, a picture that is still emerging. The critical concepts of social responsibility and social justice, ecological and human interdependence, and the parallels of biological and cultural diversity, to name a few, are difficult to comprehend when presented as isolated subjects. This broad grouping of disciplines, presented in a holistic, interdisciplinary format, is often referred to as Education for Sustainable Development (ESD).

12. However, to develop ESD work must be done to determine exactly what it is and what action it implies. Some agreement needs to be reached about appropriate concept topics for various grade levels that are representative of the entire scope of ESD, human/social development, environmental protection and economic development, which should be taught as an integrated concept.

13. One reason why such an integrated concept poses a problem for educators at present is that there are so few good models of what both the formal education and public awareness campaigns portray as exemplary behaviour. Schools are beginning to adopt environmentally responsible practices, but contradictory behaviour and practices persist. For example, cafeterias often use disposable dishes and/or cutlery yet energy conservation and recycling programmes that can actually generate revenue are often overlooked because of a lack of investment

capital or the fact that such a function has not been foreseen in the distribution of professional responsibilities within the educational system.

14. Despite such constraints, the vital role of education and public understanding is now being acknowledged as crucial to achieving educational objectives with respect to sustainable development in all parts of society. All sectors of society are being drawn into the reform. Governments are discussing and in some cases already implementing national curriculum reform, which involves the development of new teaching materials reoriented towards sustainability. The use of new technology is becoming more common because of its powerful and potentially vast impact. The transition from traditional EE towards ESD is being accompanied by an adjustment in traditional science education to incorporate education on sustainable development. The knowledge of indigenous traditional peoples provides unique information and concepts and there is evidence of stronger international cooperation and many successful regional efforts. Perhaps most importantly, people are moving from general environmental awareness to real action.

15. Both formal and non-formal education play a vital role in forming people's values and behaviour. ESD should foster respect for cultural differences and for the diverse pathways that people may choose to arrive at their own solutions to sustainability. As stressed at UNCED, the ultimate goal is to educate the world's citizens to comprehend the relationship between humans, the environment and development. Consequently, public awareness and understanding of sustainable development should be one of the highest priorities in educational reform and training at the international, regional and national levels.

16. This understanding is an evolving lifelong educational process. It is an education and awareness that is reoriented towards ecological knowledge and understanding; human development, including spirituality, values, ethical responsibilities, respect for cultural diversity and a commitment to peace; and an understanding of economic development. This becomes a critical foundation for society as the world moves towards sustainable development.

17. Today, the vital role of education for achieving sustainability is gaining wide recognition in many sectors of society. An increasingly diverse array of players, including business and industry, non-governmental organizations, the media, indigenous groups and members of the performing arts are becoming partners in a broad movement towards educational reform.

18. Chapter 36 draws attention to the need for basic education as a prerequisite for environment and development education and a priority for many countries of the world, linked to the overall effort to combat poverty. The World Conference on Education for All (Jomtien, Thailand, 1990), organized by UNESCO, the World Bank, the United Nations Development Programme (UNDP) and the United Nations Children's Fund (UNICEF), emphasized the fundamental importance of achieving the goals of universal access to basic education and the eradication of illiteracy; these objectives continue to be pursued. Strengthened by the profound conviction, now universally accepted, that such goals remain a precondition for the achievement of sustainable living, steady progress continues to be made worldwide in this regard. Initiatives in a number

of developing countries are coupling basic education with information programmes on population, development and environment.

19. Also important as a foundation for the construction of sustainable development are several initiatives that have been launched to address the need for scientific and technological literacy, such as Project 2000+, launched by UNESCO and backed by a partnership of major intergovernmental organizations and agencies, and committed to the target of establishing by the year 2001 appropriate structures and activities to foster scientific and technological literacy for all in all countries.

20. National education curricula have come under close perusal in many countries, and revisions are either in process or being planned. To meet the challenge of preparing young people to live in a rapidly changing and increasingly global context, a broad range of social actors, including not only teachers, parents and students but also community leaders, scientists, professionals, indigenous peoples and policy makers, are being drawn into the process of curriculum reform. As might be expected, national Governments and international organizations are playing a major role in this process, but contributions are also forthcoming from professional educational associations, non-governmental organizations and industry.

21. A number of countries have begun innovative school programmes in environmental activity work. These action-oriented and hands-on approaches to sustainable development learning encourage students to sample local water sources, measure levels of pollution, analyse energy conservation efficiency or survey day-to-day climatic conditions. To make the link between local and global activities, some of these initiatives use the Internet to link the data sets fed onto the system by different student groups throughout the country, and also use satellite information to provide pinpoint geographic positioning.

22. Recent technological advances offer an unprecedented opportunity for appreciating the complexity and unity of the global system, an opportunity that may encourage a new global consciousness and drive the behavioural changes needed to establish more sustainable lifestyles. New information technologies provide access to knowledge and information in a democratic manner. People can access knowledge bases, exchange research results and, by integrating information from many places and many disciplines, arrive at innovative solutions.

23. The exploration of new information technologies, such as the Internet, has only just begun, but there is global recognition that the implications of such technologies for education in general and ESD in particular is enormous. At the same time, because such electronic networks have such a potentially enormous reach and their content is augmenting not only rapidly but also in an unregulated and sometimes opportunistic manner, concern has been expressed from several quarters about maintaining information quality and accuracy and avoiding commercial exploitation. Another major problem is the lack of access to such new communication technologies in many developing countries.

24. The knowledge of indigenous/traditional peoples about the natural environment and sustainable lifestyles can prove to be an invaluable and

inspiring resource that emphasizes the cultural diversity of human strategies for sustainable living. Such initiatives promote a broader appreciation of the need to adapt sustainable development thinking to local cultural, socio-economic and ecological contexts.

25. If sustainability is to be achieved in agriculture, ESD must reach the population that is economically active in agriculture, which will number some 1.18 billion by the year 2000. For farming communities, agriculture case-studies help understand how the policies, programmes and activities of national agricultural extension systems correspond with the management of natural resources for sustainable agricultural production and food security. Environmentally friendly farming practices, such as integrated pest management and integrated plant nutrition, are being promoted in Asian and African countries.

26. International cooperation in the area of ESD is gathering momentum, catalysed by a number of significant international conferences and workshops on the theme since UNCED, as well as by incisive evaluations and recommendations, such as that provided by the International Commission on Education for the Twenty-first Century led by Mr. Jacques Delors. In recognition of the central importance of ESD, UNESCO established in 1994 the Transdisciplinary and Inter-agency Cooperation Project on the theme "Environment and population, education and information for development (see section IV below for more detailed information on these recent developments in international cooperation).

27. Sensitizing the public at large to environment and development concerns remains an important prerequisite for attaining sustainable development, which has been accomplished through a wide variety of channels, targeting many different sectors of society. One of the main objectives has been to instill a sense of local environmental responsibility, while empowering individuals with the knowledge that they can act to improve the quality of their local environment.

28. Campaigns for public awareness and action have led to the creation of partnerships among business leaders, community organizations, policy makers and educators. In developing countries, communities mobilized through the joint efforts of neighbourhood associations, church groups, schools, non-governmental organizations, industry and Governments, have come to understand the processes of waste disposal, water quality and energy use, and have applied such knowledge to improve the quality of their urban environment.

29. Mass media is obviously a partner of particular importance for raising public awareness and changing attitudes towards environment and development. In many countries, evaluations are being conducted of the media as a tool for facilitating the exchange of information and promoting public understanding. Governments, non-governmental organizations and other organizations are learning how to ensure the exchange of appropriate information on the subjects of environment, population and sustainable development, and how to further their messages using the media.

30. The role of the media was analysed at the Interregional Workshop on Reorienting Environmental Education for Sustainable Development (Athens,

26-30 June 1995). Addressing in particular the issues of information quality and the identification of target audiences, the workshop participants made the following observations and recommendations:

(a) All forms of media should be considered, including television (TV), radio, newspapers, folk arts, festivals, pamphlets, posters and bill boards;

(b) Environmental news for the most part covers catastrophes. There is a need to bring environmental education information and stories to prime-time TV and radio in order to provide a broader and more balanced coverage;

(c) A gap persists between scientific knowledge and the information transmitted by the popular press. This may be attributed to the lack of knowledge and training of press practitioners, who are unable to grasp the full significance or meaning of the information that they have to present;

(d) Training is needed at three levels: to encourage specialists to provide appropriately packaged information to the media, to help non-governmental organizations bridge the gap between specialists' knowledge and that of audiences, and to assist media practitioners in their task of providing information to audiences in a comprehensible manner;

(e) For certain international TV networks, training workshops on environmental education should be organized for media professionals in order that they may prepare short clips on relevant subjects to fill unscheduled time on their stations. Such initiatives can be organized by non-governmental organizations.

31. Awareness campaigns for the general public and training programmes to enable teachers to interpret media messages could also be undertaken. At the grass-roots level, communities should be encouraged to establish their own centres for environmental education and produce their own programming.

B. Emerging trends in promoting training

32. Training at all levels is deemed essential to meeting the challenges of sustainable development. Changing production and consumption patterns, the development and transfer of environmentally sound technologies, efforts to alleviate poverty and increase employment, the revision of formal and non-formal education programmes to provide education for sustainable development, all these matters and many others demand a major training effort. Throughout Agenda 21, training is repeatedly recognized to be a major concern. It is dealt with in numerous chapters, including chapter 37, which deals with capacity-building, chapter 35, which deals with science for sustainable development, and each of the topical chapters. The training issue - in terms of policy and action - is dealt with in detail in the reports on these various chapters that are before the Commission; only training directed explicitly towards ESD is dealt with in the present addendum.

33. Training and retraining for sustainable development is directed at different audiences: pre-service, for learners still in the formal education

environment; in-service, for individuals already on the job, including employees of municipalities, education institutions, public agencies, organizations and non-governmental organizations; and the training of trainers, for producing individuals capable of training and educating others. The training of policy makers is a particularly important area that has received only limited attention to date. Furthermore, since many environmental problems remain poorly understood even by experts in the field it is particularly challenging to provide decision makers with both the latest information and at the same time a subtle appreciation of the current limits of scientific knowledge.

34. Training activities assisted by IEEP at the regional and national levels have been primarily aimed at teachers and teacher-trainers. This initial series of workshops has triggered many others, as countries have reproduced materials and format and taken the initiative to reach out to very diverse target groups. In the area of sustainable agriculture, UNDP has succeeded through agro-ecological training, participatory research, field demonstration modules and policy advocacy in disseminating sustainable agricultural practices among traditional farmers. Another indication of progress achieved is provided by the decision of the International Labour Organization (ILO) to integrate environment and sustainable development considerations into training activities in all of its programme areas. The ILO facilitates training workshops around the world on such issues as environmental legislation, environmentally sound technologies, environmental awareness, teacher training and information exchange.

35. The current period of the restructuring and globalization of economies also requires new efforts to promote a flexible and adaptable workforce. Despite progress in this area, much more will be required through the collaboration of Governments, industry, trade unions, local communities and consumers. Greater efforts must be made to facilitate practical, vocational and management training activities that reflect environment and sustainable development priorities. Trained workers can train fellow workers on the job cheaply and effectively.

II. COUNTRY EXPERIENCES: MAIN ACHIEVEMENTS AND TRENDS IN NATIONAL IMPLEMENTATION

A. Reorienting education towards sustainable development

36. Some illustrative examples of reorienting education towards sustainable development that may be of interest to other countries are provided below.

1. School reform and curriculum reorientation

37. In an effort to revitalize public education, many countries are reviewing school curricula to ensure that they are well suited to serve students and society in a world of rapid change and in anticipation of the next millennium. Evaluation of the concept of ESD and the manner in which it may be integrated into revised and innovative educational programmes is a major consideration. Formal education programmes are addressing the issue of sustainable development in order that students may be informed, concerned and equipped with appropriate skills and lifestyle habits for the future. For the first time, efforts are

being made to reform curricula, with input from a broad array of people, including students, parents, community leaders, indigenous peoples, policy makers and educators.

38. More and more countries are developing and publishing teacher modules and educational packets using environmental information. As few environmental education programmes exist for the time being, one solution is to incorporate material, as appropriate, into existing subject areas, such as science, social studies, geography, global studies, environmental studies, health and population education. Another approach is to address sustainable development concerns as part of a broad restructuring and reform of educational systems during which educational goals and curricula will be revamped.

39. Despite the challenging socio-economic and technological situations that they are facing, many countries with economies in transition are making education for sustainability a priority. Their actions include the development of interdisciplinary education and training programmes and research projects, as well as the establishment of international cooperation, networks, databases and publications on the subject of ESD.

40. The North American Association for Environmental Education (NAAEE) is developing guidelines to assist educators in the design and selection of environmental education materials. Referred to as national standards, such guidelines allow the assessment of quality without limiting the teacher's flexibility in controlling content, teaching techniques or other aspects of instruction; the standards are based on seven criteria.

41. At a regional workshop held in Dakar, from 22 to 26 May 1995 and organized by UNESCO, specialists from 10 sub-Saharan countries developed new curriculum guidelines to mobilize educators and decision makers towards sustainable development. The material was designed to accommodate the diverse cultural realities of the region, including anglophone and francophone countries, and to integrate environment, population and development perspectives into school curricula.

42. UNESCO and the United Nations Population Fund (UNFPA) are working with national Governments in Latin American countries to incorporate population, family planning and reproductive health education into the curricula of basic and teacher training programmes, drawing attention to the intricate links between demography, education and environment.. The development of teaching aids and materials, curriculum revision and extensive teacher training has involved community members in project design and implementation.

43. To ensure that graduates in the year 2000 will be well prepared for the future, the Toronto Board of Education has undertaken educational reform to integrate sustainability into the existing education system of the city. A massive community consultation involving all sectors, from students and parents to the public at large, was launched to address the question: What should students know, do and value by the time they graduate from school? The result was the development of six basic "graduation outcomes", which have become the basis for major curriculum reform, shifting the focus away from the traditional

core subjects of language, mathematics, history etc. In the new vision, the essence of sustainability is integrated into every aspect of the curriculum.

44. Where training courses or materials are in short supply or unavailable, teachers are using documents from numerous sources, such as the media, textbooks produced by non-governmental organizations, and teaching packs developed and supplied by industrial firms with an interest in protecting the environment.

45. Non-governmental organizations are also involved in the development of educational materials. The World Resources Institute has developed a series of teacher guides that address global trends in environment and development. The World Wide Fund for Nature (WWF) and the International Union for the Conservation of Nature (IUCN) continue to be major producers of relevant materials at the international level, while hundreds of non-governmental organizations are active in most countries.

46. In addition to the traditional books, a variety of material that is educational, practical and communicative is being developed with new technology in the form of databases, video cassettes and CD-ROMs. Users of such materials must none the less remain alert about their authors as well as their motives for distributing the information: the accuracy and potential bias of information should be reviewed on a regular basis.

47. A resolution by the European Parliament has led to an increase in pan-European environmental education projects. The new vision led to an increase in the number of places available for degrees in environmental studies at the university level. In addition, teacher training in environmental studies is increasing in training colleges and universities.

48. The Environment and School Initiatives Project of the Organisation for Economic Cooperation and Development (OECD) involves 19 countries in an international curriculum development project in which each country has created its own network of schools. Students and teachers study local environmental problems and create a local environmental knowledge base on which to build understanding and sense of responsibility.

49. In Indonesia, the Population and Environmental Education Research Centre of the Institute of Teacher Training and Education is developing a curriculum guide for pre-service and in-service teachers in order to enable them to incorporate ESD in their programmes. Similar initiatives within the IEEP framework are also being carried out in Argentina, China, Nigeria, the United Republic of Tanzania and Uganda.

50. Efforts are under way to mobilize the educational community to understand and support the changes that will be required to accommodate the concept of sustainable development. One such initiative, entitled "Education 21" and led by UNED-UK (United Nations Environment and Development-United Kingdom), has proposed that the education community be given major group status for the implementation of Agenda 21.

2. Promoting an interdisciplinary approach

51. Establishing an interdisciplinary approach in education is a difficult challenge, both conceptually and institutionally. Educators and trainers need to carefully conceptualize the overall interdisciplinary approach, and must also be able to relate it to everyday life situations. Institutions are having trouble establishing the interdisciplinary cooperation that is needed to deal with the complex issues of sustainable development. This problem is further complicated by the administrative challenge of pooling or sharing funds that are still allocated on a departmental or sectoral basis.

52. A European Commission report describes progress made since 1992 by its member States in developing an interdisciplinary approach, including awarding attendance at training courses; motivating teachers via local, national or international projects; the introduction of progressive training cycles of one, two or three years; the integration of training time into school hours; the development of specific courses for head teachers; integrating environmental education into compulsory training; making retraining compulsory for all teachers; financial assistance; increasing the number of university summer schools; and developing distance-learning where possibilities for travel are limited.

53. Under the leadership of IEEP, workshops for educators were carried out in 51 countries in 1995. In most cases, such workshops represented an initial phase of training, and it remains the responsibility of each nation to allow the trainees to work together to enhance concepts, produce materials and train others. It is intended that the small groups involved will remain in contact with each other both within their countries and at the international level in order that they may take part in the conceptual growth of ESD while adapting it to their local situations.

3. Innovative communication activities and new information technologies

54. Traditional communication vehicles, such as posters, theatre, storytelling and a resurgence in world-wide interest in traditional knowledge, folk art etc., remain extremely valuable in reaching large audiences. New information technologies also need to be recognized as potentially important tools for significant impact that carry the messages of sustainable development much faster and farther than more conventional methods.

55. The rapid expansion of new communication technologies in many countries, in particular developed countries, facilitates the rapid dissemination of ideas and materials that can be adapted to local linguistic and cultural contexts: the numerous logistical problems associated with traditional printing and shipping can be eliminated, allowing for the rapid modification of materials, including translation and local reproduction.

56. Since April 1995, students in hundreds of schools in the United States of America and other countries have been involved in the first stages of the Global Learning and Observations to Benefit the Environment (GLOBE) project. GLOBE is

designed to enable students from a large geographic region to collect and share data on local environmental conditions. Through this hands-on experience, students learn to assess their own natural environment, and by linking the data sets via the Internet are able to observe the growth of their collective knowledge, animated by sophisticated, computer-generated visualizations.

57. To help teachers integrate education for sustainable development into their curriculum and to stimulate active participation by school children and the community, Costa Rica implemented an innovative programme on the interactive use of radio. The use of this technology provided teachers with an easily accessible and affordable teaching tool, and introduced environmental themes to children of 11 to 13 years of age.

B. Increasing public awareness

1. Public awareness campaigns

58. Public awareness and public-action campaigns have often had a major impact on policy decisions and on society as a whole. Examples are emerging of innovative country projects which demonstrate that by generating awareness, public support can be mobilized and increasing pressure for change exerted.

59. The European Commission has developed a comprehensive communication and public awareness plan that has focused during the past four years on three target groups: journalists, specialized groups and the general public. They have been creating links between the following groups: public authorities; public and private enterprise; non-governmental organizations; trade unions; professional associations; and the general public.

60. New partnerships are forming to organize public awareness and public action campaigns. Business leaders in the private sector are joining forces with policy makers, educators and the public to implement joint programmes. For example, a combination of public and private-sector partners, supported by UNESCO, has launched a project entitled "The nature of the landscape" in an effort to organize clean-up campaigns in three major shantytowns of Brazil. Through formal and informal programmes, the people of these communities learn to understand waste disposal, water quality and energy use problems, and as a result are empowered to create their own solutions.

61. In order to improve the quality of life in the impoverished districts of Medellín, Colombia, the city's municipal authorities in cooperation with UNESCO are producing a document featuring the different actions undertaken in the framework of the Integrated Programme for the Advancement of Medellín's Underprivileged Districts (PRIMED). PRIMED was launched to provide an interdisciplinary approach to the multiple socio-economic and environmental problems facing communities. It focused on administrative decentralization, field work, information dissemination and the definition of realistic goals that are feasible for local authorities. The programme has already been implemented in 15 localities within the city and various educational and informative publications have been published.

62. UNESCO is working in the area of media and the arts with the One World Broadcasting Group. One World, comprised of national public broadcasters across the world, will produce One World Global Magazine, a television series that will address global sustainable development issues related to environment, human rights and development. The pilot programme, completed in late 1995, is to be followed by 11 additional programmes.

2. Developing local action plans

63. While some progress has been made, the comprehension of sustainable development is still limited, particularly true at the community and municipal levels, and among local decision makers. ESD must address a broad spectrum of issues that are of direct concern to local communities and must not confine itself to global issues, which often seem beyond individual comprehension and local spheres of action. As much as possible, the objectives of ESD should be determined locally, while at the same time respecting a global minimum of universally accepted concerns.

64. One example of how to convey global sustainable development messages and make them relevant at the local level is taking place in Canada: basing themselves on the book Rescue Mission Planet Earth, a consortium of more than 40 federal and provincial government agencies, educational organizations, members of the private sector and youth groups have created a pedagogical insert designed by Canadian youth entitled the "Canadian youth action guide". In early 1996, the book and insert are to be distributed to every school in the country, as well as to numerous youth and community agencies. Youth themselves will be mobilized and empowered to initiate thousands of action plans that address key environmental and sustainability issues in their communities. The young people will share their experiences with others via a special Internet linkage.

III. EXPERIENCES OF MAJOR GROUPS AND NON-GOVERNMENTAL ORGANIZATIONS

65. Major groups and non-governmental organizations are mobilizing and networking to become more effective channels for communicating information about sustainable development. In order to revitalize education efforts, such major groups and non-governmental organizations are coordinating efforts with government organizations, ministries of education, institutes for teacher training, ministries of environment and numerous local organizations.

A. Women

66. Women's groups continue to play a very significant role in the quest for sustainability. Their actions have an impact at every level of society, from practical household management and village reform to the international level. One of the central items adopted in the Platform for Action adopted by the Fourth World Conference on Women deals with the environment. The Conference also called for equal access to education and training for girls and women, also a major goal of chapter 36 of Agenda 21.

67. Within IEEP, a number of activities have taken place targeted on women. A pilot project in Pakistan on promoting the role of women in fostering education for sustainable development, which began in 1994, has involved women and girls from 30 families in the province of Punjab. The results of the research were disseminated to policy makers and to non-governmental organizations. An international symposium on empowering women through environment and population education for sustainable development was held in Islamabad, Pakistan from 4 to 9 December 1994. The results of the symposium, technical papers and country reports were disseminated for use in environment and population activities involving women as major leaders and beneficiaries. A regional training workshop on environmental communication for women in household and community water management in the Arab States was held in El-Kharga City, Egypt from 10 to 14 December 1995. The workshop aimed to help women become more efficient in their use of household and community water resources, and to put the media institutions working with them in a better position to influence women in this respect, using environmental communication. An environmental communication strategy was drawn up that could be applied at the community level. In Malawi, a three-day workshop was organized in January 1994 for curriculum developers, women communicators, non-formal educators, rural development advisers, health and nutrition educators etc. to consider the theme "Role of rural women in sustainable development".

68. The United Nations Development Fund for Women (UNIFEM) has an umbrella programme entitled "Africa women act on Agenda 21" to promote and strengthen the contributions of African women to ecosystem management, the control of environmental degradation and the enhancement of biological diversity. The importance of women's indigenous knowledge for achieving sustainable development has been recognized, and will be used with other information in designing projects and activities.

69. With respect to health, the World Health Organization (WHO) recently produced and distributed an anthology with a teacher's guide, on the theme "Women, health and environment".

B. Youth

70. Youth constitute a particularly important audience for education for sustainable development. Not only do they represent a third of the world's population and over half of the population in many developing countries but they will become the future caretakers of the planet. Many of the fundamental reorientations in social behaviour that are needed to establish truly sustainable lifestyles will only be attained through the thoughtful education of today's youth and their capacity for resourcefulness, innovation and vision.

71. In an effort to bridge the gap between global issues and local concerns, UNESCO, UNEP, UNDP and UNICEF are supporting the Non-Governmental Organizations Rescue Mission to involve young people in the implementation of Agenda 21. A book accessible to a youthful audience, Rescue Mission Planet Earth: A Children's Version of Agenda 21 was published in 1994, and 10,000 youth from approximately 100 countries contributed, in addition to 50 experts. The book, launched and produced by Peace Child International, has been published in 17

languages. The network has now expanded to include some 500 groups in 120 countries. To promote the book and mobilize youth to take action towards sustainable development, UNESCO is now working with Rescue Mission on other projects in Pakistan, China, South Africa and France, as well as in the African region through the Fond de Développement pour la Coopération in Belgium and regional African non-governmental organizations.

72. Children's Paradise Village Activities was started in Japan to provide an environment for experimental learning and to foster the desire of children to live in harmony with nature and human society. There are five target age-groups, starting from four years and continuing up to 28. Organized by the Yamagishism Life Demonstration Community Centres, there are now programmes in South Korea, Brazil, Switzerland, Germany and the United States.

73. To raise awareness about environmental conservation, a three-day programme for teachers was organized by Youth In Environment in Nepal. Concepts of environment and integration of environmental concerns in education were made clear to the participants through theoretical, as well as practical means. Field visits, demonstrations, exhibitions, cultural programmes and debates were introduced to a select group of teachers from local schools. In order to broaden the impact, the programme received coverage in the press.

C. Indigenous groups

74. Only recently have scientists and educators begun to appreciate the great value and vast extent of indigenous systems of environmental knowledge and management systems. This knowledge, variously referred to as traditional ecological knowledge (TEK) or indigenous knowledge (IK), encompasses the rich history, collective understandings and symbolic thought of traditional societies living in close relationship with natural ecological systems. Incorporated into formal and non-formal education, TEK and the unique human-nature relationships underlying such knowledge systems can inspire insightful and innovative solutions to the daunting challenge of devising development strategies that are ecologically, economically and culturally sustainable.

75. Programmes that incorporate TEK are developing in many forms. Teaching materials are being developed that integrate the expertise of indigenous people. Technical support is being provided to train indigenous staff so that education programmes can be decentralized and self-sufficient. Attention is paid to including women in training programmes, in recognition of the key role that they often play in preserving the cultural values, rights and history of their communities.

76. One example is work with traditional/indigenous knowledge systems taking place at the University of Cali, Colombia. A multimedia (video and CD-Rom) and book package for the general public is being produced on the theme of "Sustainable development", as practised by indigenous cultures throughout Latin America, using water as an example. Another initiative in Colombia is that of the Colombian National Commission for UNESCO, which is developing a video for students and teachers at the primary school level on the traditional knowledge

of indigenous communities of the Andean region and its importance for maintaining a centuries-old, sustainable way of life.

D. Strengthening links between science and education

77. The Committee on Capacity Building in Science of the International Council of Scientific Unions (ICSU) has drawn attention to the serious gap between science and education. The Committee has developed a proposal for a new programme on capacity-building in science that would incorporate sustainable development considerations. The programme would establish a clearing-house for primary school science education, build a network of organizations and set up national committees for capacity-building in science within national organizations adhering to ICSU.

E. Refugees

78. The number of refugees in the world currently number about 25 million, many of whom will spend a considerable portion of their lives in this situation. In addition, many children will spend the majority of their formative years as refugees.

79. A new need has arisen for refugee training in various social skills and education for sustainable development so as to reduce tension in camps and to prepare refugees for their return. In refugee camps throughout the world, the Office of the United Nations High Commissioner for Refugees (UNHCR) has been encouraging environmental education activities, both formally through primary school curricula and non-formally through awareness-raising campaigns linked to environmental initiatives conducted by implementing partners.

IV. RECENT DEVELOPMENTS IN INTERNATIONAL COOPERATION

A. International meetings

80. Since UNCED, several international conferences, workshops, congresses and consultations have been held to evaluate the current status of environmental and development education and suggest its future direction. Presentations and discussions at such events have addressed the opportunities and obstacles that face education for sustainable development both within school systems and in non-formal education. They have dealt with the concept of growth and sustainable development; sustainability as it relates to health, population and social development; public awareness actions; and linkages with other main programme areas of Agenda 21, such as changing consumption patterns and combating poverty. In the field of economics, several conferences have focused on the concept and practice of total cost accounting.

81. The World Congress for Education and Communication on Environment and Development (ECO-ED), (Toronto, 17-22 October 1992), sponsored by UNESCO, UNEP and the International Chamber of Commerce, launched the concept of ESD to over 4,500 participants from 87 countries immediately after UNCED. ECO-ED examined

for the first time the role of education and public awareness in achieving sustainable development, and involved not only educators and communicators but also Governments, the academic community, business and industry, and the arts. ECO-ED II is now being organized by UNESCO and Canada as a "virtual conference" via the Internet.

82. An inter-sessional workshop of international experts on the theme "Education and public awareness for sustainable development" was organized by the Czech Republic in Prague (28 November-1 December 1995). A set of recommendations were formulated for consideration by the Commission at its fourth session as part of its review of chapter 36. It was recommended that:

(a) Countries develop guidelines and national action plans for ESD;

(b) National Governments cooperate closely with the major groups in developing information and education policies and in setting conditions for implementing sustainable development at the local level and/or in consumer markets;

(c) UNESCO, in cooperation with other United Nations and non-United Nations institutions, including non-governmental organizations, develop and disseminate a more detailed yet easily understandable concept of ESD, especially regarding content. In particular, research into, debate on and dissemination of ESD materials on environmental economics and the new paradigms that are emerging to take account of the trade-offs between natural and produced capital should be encouraged;

(d) The composition of national committees on sustainable development should represent the different fields of knowledge, including indigenous fields, that contribute to sustainable development, and should also include representatives of the ESD system. In particular, national education authorities and the scientific community should be encouraged to give more attention to facilitating an interdisciplinary approach to the complex issues related to sustainable development;

(e) UNESCO, UNDP and task managers of other relevant chapters of Agenda 21, in cooperation with national Governments, should explore ways and means of reaching individual households (which hold roles as both consumers of natural resources and stewards of the environment) with information on practical ways to implement sustainable development;

(f) In developing changes to the United Nations guidelines for consumer protection, important opportunities for highlighting ESD messages should be taken into account, especially when addressing consumer education and information programmes;

(g) ESD messages should be included in a variety of educational programmes to give everyone the knowledge to participate actively in creating his or her own sustainable lifestyle;

(h) Local, national, and international administrations should offer targeted programmes of ESD, especially specific training for decision makers;

(i) Primary, secondary and tertiary programmes should offer ESD within their curricula;

(j) Public awareness and action programmes should be encouraged, utilizing all traditional communication methods, the mass media and emerging communication technologies to create an impact on policy decisions concerning sustainable development;

(k) More collaboration should be facilitated between industrialized countries and developing countries in their efforts to promote ESD, while recognizing that addressing global issues could be a shared responsibility;

(l) Multilateral institutions, bilateral governmental agencies and private organizations should be encouraged to reallocate existing resources, identify new resources and increase coordination to support the above-mentioned efforts. Local and national resources should be committed, revitalized and mobilized, especially local educational institutions;

(m) The recommendations of the Prague workshop should be taken into account in conducting the 1997 overall review by the Commission of the implementation of Agenda 21, with special reference to chapter 36.

83. A Commonwealth intergovernmental environmental education workshop, held in Bradford, United Kingdom of Great Britain and Northern Ireland, 23-27 July 1995, to assess progress since the above-mentioned workshop held in Belgrade in 1975 and celebrate the twentieth anniversary of IEEP, drew attention to:

(a) At the primary level: certain principles and skills concerning environment and sustainable development need to be introduced in order to change values and perceptions;

(b) At the secondary level: ministries of education need to be supportive of EE and to make the necessary modifications to examinations and curricula. Within schools, there needs to be a whole school approach, teachers need to act as role models and non-governmental organizations and communities need to be involved;

(c) At the tertiary level: interdisciplinary bodies are needed. Certificate and/or EE modules are needed as attachments to degree courses. Universities need to have an environmental policy in terms of curriculum, research, and action. EE should permeate existing courses. And academics should be integrated into the decision-making process;

(d) Non-formal education: there needs to be support and training for environmental educators for the media, religious groups and decision makers; the documentation and dissemination of environmental education programmes and resources; the monitoring and evaluation of EE programmes; increased funding; the development of appropriate resource materials and technology; the incorporation of traditional knowledge into EE programmes; and the integration of environmental dimension in all socio-economic activities.

84. The Interregional Workshop on Reorienting Environmental Education for Sustainable Development (Athens, 26-30 June 1996) advocated the use of research and experimentation on a short and long-term basis as a key element for the future progress of environmental education. The following conclusions were drawn:

(a) Little research and experimentation is being undertaken world wide, and information/results from what is being undertaken is difficult to access;

(b) Long-term benefits of EE research and experimentation are not fully recognized by user groups or funders;

(c) Research and experimentation on environmental education can be done at various levels: the academic/research level on the theoretical/developmental aspects; the non-governmental organization level on practical approaches and experimentation; the school level on learning approaches; and the community level on fostering partnerships.

85. Major recommendations from other conferences or related events include:

(a) Facilitate the reorientation of all areas of education towards ESD;

(b) Retrain teachers and instructors to incorporate sustainability concepts;

(c) Respect and incorporate traditional/indigenous ecological knowledge into curricula;

(d) Use new technology: connect trainers to the Internet system;

(e) Mobilize all sectors of society, whether agriculture, industry, health or other. Work with non-governmental organizations and business to develop guidelines that can be adapted to local contexts. United Nations agencies should establish links with industry;

(f) Recognize the need for social marketing and work with the media to convey the message;

(g) Change production and consumption patterns.

B. International Commission on Education for the Twenty-first Century

86. At the request of UNESCO, the International Commission on Education for the Twenty-first Century, comprised of 14 individuals of diverse national, cultural and professional backgrounds and led by the former president of the European Community, Mr. Jacques Delors, has examined the challenges facing education in the future; a report to be published in April 1996 will put forward to policy makers at the highest level the recommendations of the International Commission for action. The work of the Internatic al Commission provides an important

overall framework for change, including the reorientation of education towards sustainable development.

87. The stated objective of the International Commission is to identify the main trends influencing education, bearing in mind economic growth and the aim of sustainable development. The Commission emphasizes the growing role that education will be required to play in addressing emerging social concerns. It calls for a new humanism to safeguard against the unintended consequences of technology-based, competition-driven and media-dominated societies, which may lead to the dehumanization of values and culture.

88. The International Commission proposed that the four pillars of education for the twenty-first century be: (a) learning to know, (b) learning to do, (c) learning to be and (d) learning to live together. In the light of the growing threats to peaceful coexistence on the basis of ethnic, religious or national differences, the International Commission emphasized the great importance of the fourth pillar. Guided by the recognition of a growing global interdependence and a shared analysis of the risks and challenges of the future, a new spirit of cooperation and cohabitation could be created that would induce people to manage their differences in an open and peaceful manner.

89. In its summary report of November 1995, the International Commission noted a general disillusionment with economic and social progress. Such disillusionment was evident in rising unemployment and the exclusion of growing numbers of people in the affluent countries, and was demonstrated by the continuing inequalities in development throughout the world. While humankind was increasingly aware of the threats facing its natural environment, the resources needed to put matters right had not yet been allocated, despite a series of international meetings, such as UNCED, and despite the serious warnings of natural disasters or major industrial accidents. The truth was that the concept "economic growth regardless" could no longer be viewed as the ideal way of reconciling material progress with equity, respect for the human condition and respect for the natural assets that we had a duty to hand on in good condition to future generations.

90. The International Commission emphasized the central role that education must play, insisting that such major challenges must be a concern in educational policy-making, and that it must not fail to highlight the ways in which educational policies could help to create a better world, by contributing to sustainable human development, mutual understanding among peoples and a renewal of practical democracy.

91. The International Commission noted the growing need, in the political and economic spheres, to resort to international action in order to find satisfactory solutions to problems of a global dimension. It developed several recommendations, including calls for:

(a) A policy of strong encouragement for the education of girls and women, following on the recommendations of the Fourth World Conference on Women;

(b) The allocation of a minimum percentage of development aid (a quarter of the total) to fund education: this adjustment in favour of education should

also apply to international funding institutions, first and foremost the World Bank, which already had an important role;

(c) The further development of debt-for-education swaps to offset the adverse effects on State education expenditure of adjustment policies and policies for reducing internal and external deficits;

(d) The widespread introduction of the new technologies of the information society in all countries in order to prevent the growth of yet another gap between rich and poor countries;

(e) Enlisting the outstanding potential of non-governmental organizations, including grass-roots initiatives, which could provide valuable support to international cooperation in education.

C. International organizations

92. Within the United Nations system, there has been significant progress since UNCED to reorient existing programmes and to launch new initiatives.

93. IEEP, launched in 1975 in the aftermath of the United Nations Conference on the Human Environment, has been working since UNCED to adapt its work programme to implement the recommendations of chapter 36. The main focus of IEEP is on:

(a) Developing general environmental and development awareness;

(b) Improving information and knowledge;

(c) Refining concepts, methods and approaches;

(d) Incorporating environment, development and population dimensions into the educational process of all countries;

(e) Promoting new values, attitudes and behaviours;

(f) Fostering ethical responsibilities;

(g) Promoting commitments for actions for the protection and improvement of the environment;

(h) Stimulating participation in sustainable development decision-making and activities;

(i) Improving the quality of life.

94. The work of IEEP falls under four broad categories:

(a) In research and experimentation, pilot projects and case-studies are under way in countries throughout the world, including case studies on the state of EE in nine high population countries (Bangladesh, Brazil, China, Egypt, India, Indonesia, Nigeria, Pakistan, Russia);

(b) Curriculum and materials development has focused on introducing the concept of sustainable development into educational materials, including the publication of four new modules for secondary schools on the themes of freshwater resources, biological diversity, global change and oceans, and coastal regions and their resources;

(c) For the training of personnel, numerous seminars and workshops have been organized at the regional, national and municipality levels in a number of countries, such as Bangladesh, Chile, Colombia, Costa Rica, Ghana, India, Latvia, Namibia, the Philippines and Thailand. Emphasis has been given to training teachers and teacher trainers;

(d) For exchange of information and experience, the primary vehicle remains the quarterly newsletter Connect, published in 8 languages.

95. In mid-1995, the third external independent evaluation of IEEP was undertaken, which concluded that the interest in and opportunity for education for sustainable development have never been greater in all regions of the world. However, numerous changes are recommended to update and improve the content and delivery of IEEP, taking full advantage of its 20 years of work.

96. Since 1994, within UNESCO the IEEP has been incorporated into the new transdisciplinary and inter-agency cooperation project on the theme "Environment and population, education and information for development (EPD)"; the project was set up by UNESCO to reorient and integrate UNESCO work on implementing chapter 36 of Agenda 21, together with the implementation of the action plans of the above-mentioned major United Nations conferences, as well as the recommendations on education and information that appear in the above-mentioned conventions on biological diversity, climate change and desertification. EPD experiments with and promotes new modes of action that cross traditional conceptual and institutional lines. Another pre-existing cooperation project was also incorporated within EPD: the UNESCO-UNFPA project on the theme "Action on population, information, education and communication", which serves as basis for integrating environment and population concerns. The expertise and experience of these two undertakings, combined with the scientific backstopping provided by the five UNESCO intergovernmental programmes in the field of environment and development and by UNESCO work in culture and communication provide an interdisciplinary base from which to explore new avenues for promoting education for sustainable development and an integrated follow-up to major United Nations conferences in the area of education and information.

97. In 1995, discussions began to improve cooperation within the United Nations family with respect to education, public awareness and training, and to develop a new initiative for joint action that will build substantially on the 20 years of experience acquired within IEEP. The new cooperative arrangement will provide common elements in terms of the content and methodology that could be applied and adapted by countries, major groups and local communities to further public understanding and action. Partners from outside the United Nations system could also be associated with the new initiative.

98. Since UNCED, UNDP has adopted the attainment of sustainable human development as its primary objective. UNDP has initiated 11 new interregional and regional activities that were dedicated to or included environmental education, training, education and awareness-raising components. One initiative, PULSE (Pioneering Useful and Learning Strategies in Basic Education), served as the link between the World Conference on Education for All and UNCED conferences. The Africa 2000 and Asia Pacific 2000 initiatives, begun before 1992, reflect nevertheless the objectives of Agenda 21. UNDP, together with UNEP and the United Nations Institute for Training and Research, has sponsored an environmental management training course that promotes general awareness of the sustainable development perspective.

99. Sustainable Agriculture Networking and Extension (SANE) was created by UNDP to enhance capacity-building and human resource development in the area of sustainable agriculture through agro-ecological training, participatory research, the implementation of field demonstrations modules and policy advocacy. The SANE project links non-governmental organizations, universities, international/national research centres, the Food and Agriculture Organization of the United Nations (FAO) and other organizations concerned with food production and environmental preservation. Nine countries were selected to participate in the programme, and after one year of operation, the programme is seeing positive results, i.e., the systematization, analysis and dissemination of successful sustainable agricultural practices used by traditional farmers in the Lao People's Democratic Republic. Regional and local training occurs via workshops, seminars, short courses, internships and study tours to examine the effectiveness of educational methodologies. Materials are produced and distributed as widely as possible.

100. The ILO has given priority to relevant follow-up activities on chapter 36 of Agenda 21, particularly on training. At its tripartite advisory meeting on environment and the world of work, held in Geneva, the ILO recommended that such activities should integrate environment and sustainable development considerations into training activities in all ILO programme areas, including those for women and workers' and employers' education activities. Particular emphasis should be given to the training of trainers' programmes. Working both on its own and in conjunction with other agencies, the ILO facilitates numerous training workshops around the world, focusing on such issues as environmental legislation; environmentally sound technologies; environmental awareness; teacher training; and information exchange.

101. The World Health Organization (WHO) has implemented numerous health training programmes to service many sectors of society and many regions throughout the world. WHO subjects include environmental health teacher training; environmental epidemiology; and human exposure assessment. As follow-up to UNCED, WHO has created a project to support countries in the development of national plans for human resources development in environmental and occupational health, in collaboration with UNEP and the United States National Institute of Occupational Safety and Health, with pilot programmes in Mexico, Cuba and South Africa.

102. Educational materials are being developed in a project sponsored jointly by WHO, CRE-Copernicus (Association of European Universities-Cooperation Programme

in Europe for Research on Nature and Industry through Coordinated University Studies), UNEP and UNESCO-UNITWIN with the goal of improving environmental health teaching in universities. The project includes the production of a text and teaching kit, as well as the sponsorship of two teacher-training workshops to field test the materials for university teachers.

103. ICSU, in an interdisciplinary approach, has developed a set of materials on the subject of global change for students and teachers at the senior secondary or early university levels. The materials allow science teachers to introduce or illustrate principles that are presented in an existing course but in a new and exciting global change context. ICSU has proposed a programme on capacity-building in science to focus on primary-level science education, the isolation of scientists and public awareness of scientific issues. In both materials and programmes, the connections between the science of the environment and the requirements of sustainable development are stressed.